THE ART OF APPARELLING

And fitting of any

SHIP

With Masts, Yards, and Cordage.

Wherein is shewed a true proportion for the Masting, Yarding, and Apparelling of any Ship, whose Length, Breadth, and Depth is known: With Rules for the Sizes and Lengths of all sorts of Cordage that belongs to any SHIP.

All which is performed by a *Scale* called

THE MARINERS SCALE,

Or by two Sliding lines of Numbers.

Whereby, if the Length and Thickneſſe of the Main-Maſt be accounted upon it, there may be found (only by inſpection) the length and thickneſs of all the other Masts and Yards, and alſo the Sizes, the Lengths, and the totall number of Fathams of every size Cordage for the apparelling of any Ship, without uſing of Compaſſes or altering the *Scale*.

The ſecond Impreſſion,

Newly corrected, amended and defended by the Author, HENRY BOND; Teacher of Navigation, Surveying, and other parts of the Mathematicks, in the Bulwark neer the Tower.

Printed for the Widow *Seyle* in the Bulwark by the Tower, 1663.

TO THE
READER.

Courteous Reader,

Hou haſt here preſented to thee in a new way, an exact method *and* direction, *for the* Apparrelling *and* fitting *of any* SHIP *with* Maſts, Yards, *and* Cordage. *There is nothing expected from any by the* Author, *but a charitable cenſure: If there be any that have no occaſion to uſe it, I deſire them not to deſpiſe it, leſt themſelves do ſomething more deſpicable. I hope ſome young men* (Sea-men) *will reap ſome benefit by it, which to the Author ſhall be more then ſuperabundant ſatisfaction.*

 VALE.

An Apologie (in defence of this Work) to ——— *&c. that hath groſly abuſed this Work, and the Author, in Print.*

SInce the firſt Impreſſion of this *Apparelling of a Ship*, there is an Author that hath written another Tract, which he entitles, *The Complete Modeliſt*, wherein in the Margin of his Epiſtle to the Reader he ſets down theſe words, *Theſe rules by way of proportion, formerly printed, cannot hold, but will deceive thoſe that truſt to them.* For anſwer to this groſs and falſe ſcandal of this Author, I ſay, that all the Cordage that belongs to the Maſts ſhall hold in proportion according to the lengths of the Maſts, above the firſt Deck, in deſpight of envy; and for the Cordage that belongs to the Yards, if the Yards be longer or ſhorter then a proportion given, firſt find the length of the Cordage belonging to the Yards, according to the proportion given; then as the length of the Yard, according to the proportion given, is to the length of the Yard you would have your Cordage for, ſo is the length of each particular Cordage found, (according to the proportion given) to the length of the Cordage for the Yard you deſire to have it for. For the weight of Anchors and Cables they are ſuch things as are arbitrary, left to the diſcretion of the Maſter, or other that hath to do in the buſineſs, according as they find the Built of the Ship to be: and the like arbitrary it is in the Sizes of ſome of the Cordage and Ground-tackle.

For my part, that Author might have vented any thing that came out of his own brain, I ſhould not have taken any notice of it, had he not meddled to diſparage my Work, which he is not capable to underſtand the reaſon of. If it were not impoſſible to perſwade that Author to underſtand any thing of *Euclides Elements of Geometry*, certainly the man would be of another mind then now he is. He ſtyles himſelf, *Maſter in the art of raiſing the Model*: For a reply to that, all men

men know that Maſter-Shipwrites are onely Maſters in the art of making a Model, which they ſometimes do of a Veſſel that they are to build, although they oftener do it by a Draught; and ſo is this Authors a Draught, and not a Model. To name a Draught a Model is very ſtrange; he that doth it is as much deceived in the matter as *Scoggins* ſcholer was when he ſaid, *Tom Miller of Ozney was Iaphet's father.*

I made no Dedication of my Work, becauſe I would not diſhonour any Gentleman to preſent him with a Dedication of Ropes. But it may be that Author knew that he, whom he preſented his unto, deſerved ſuch a Dedication.

That Author divides the Keel of every Veſſel into fifteen parts, and two of thoſe parts he divides into twenty; ſo that every Veſſel muſt have a new ſcale of Cordage, which with making a Draught (that he calls a Model) will coſt much time and trouble to little or no purpoſe. I have had a Draught at leaſt twenty yards, which was done by an able man that is now in place of having the overſight and diſpoſure of ſuch buſineſſes, in which Draught the Keel is divided into fifteen parts, and two of thoſe parts into twelve; which differs from the way that he, that calls himſelf *Maſter in the art of raiſing the Model*, hath ſet down. The ſame man that made the Draught that I have, hath had my Book ſeveral years, and never found any ſuch fault with it, as he that calls a *Draught* a *Model* would ſeem to perſwade the world there is. Yet notwithſtanding that Authors high conceit of himſelf, his Art, and his Work, and his Envy againſt mine, I would not have waſted my time, nor ſpent my inke and paper by way of defence, had it not been in the behalf of a Widow that owes the Copy, and is at the charge of Printing it.

At the Widow Seyles *in the Bulwark, April* 30. 1663.

HENRY BOND, *Sen.*

The Particulars contained in this Tract.

1. *A Table of the Lengths and Thickneſs of all the Maſts and Yards belonging to a ſhip of ſix hundred tuns.*

2. *A Table of all the Names, Sizes and Lengths of all the Cordage, belonging to the Apparelling of the ſame ſhip, beginning at the leaſt ſize, and going on to the greateſt. The quantity of each ſize by it ſelf.*

3. *A Table of the Names, Sizes and Lengths of ſome other Cordage and Ropes that are of neceſſity in a ſhip, and are for the fore-propounded ſhip.*

4. *A Table of the Lengths and Thickneſs of all the Maſts and Yards belonging to a ſhip of* 448. *tuns.*

5. *A Table of all the Sizes and Lengths of the Cordage belonging to the Apparelling of the ſaid ſhip, the Cordage of each Maſt by it ſelf, as the Main-Maſt, Main-Top-Maſt, Main-Top-Gallant-Maſt, and the reſt in order.*

6. *The uſe of the Mariners Scale in finding the Maſts, Yards and Cordage of any other ſhip, from either of theſe two ſhips propounded.*

By the Mariners Scale, with ſome additions to it, may be performed whatſoever is neceſſary in Navigation, which ſhall ere long (God willing) be publiſhed.

7. *A Table containing the number of Fathams and odde Feet that are contained in one hundred weight of any Cordage, from one inch to ten inches circumference.*

A Table of the Lengths and Thickneſs of the Maſts and Yards of a Ship that is 94 foot and a halfe by the Keele, 37 foot at the Beam, and 16 foot and an halfe in Hold, which is of the burthen of about 600 Tunne.

All which Maſts and Yards are very neer in continuall proportion one to another in their lengths.

	Length in Feet	Thickneſs in Inches.
The Sprit-ſail Top-ſail Yard	18.50	5
The Fore-top-gallant Yard, and the Sprit-ſail (Top-maſt	18	5.50
The Main-top-gallant Yard	23	8
The Fore-top-gallant Maſt	24	8
The Mizne Top-ſail Yard	26	8
The Main top-gallant Maſt	28.50	10
The Mizne Top-maſt	34	10
The Fore-top-ſail Yard	39	12
The Main-top-ſail Yard	46	14
The Croſſe-jeck Yard	42	9.50
The Fore-top-maſt	47	17
The main-top-maſt	55	18
The Sprit-ſail yard	73	21
The mizne-maſt	66	22
The Mizne yard	65	20
The Fore-yard	79	25.50
The Bouſprite	85	28
The main-yard	93	30
The Fore-maſt	95	31.50
The main-maſt	107	36

A Table of the sizes, the names, the number, and the lengths, of each Cordage for Apparelling, belonging to the fore-propounded Ship.

1. Cordage of 1 inch $\frac{40}{100}$ parts.

		Fathã	Fathã
2	Fore Top-gallant Braces	32	64
4	Fore Top-gallant Boling Bridles	1.50	6
2	Fore Top-gallant Lifts	28	56
8	Main Top-gallant Lanniards	2.50	20
4	Main Top-gallant boling bridles	1.50	6
1	Main Flag-staffe stay	17	17
8	Mizne Top-mast Lanniards	2.50	20
1	Sale of the Sprit-sail Top-sail Crain-lines	48	48
2	Mizne Top-sail Bolings	16	32
2	Mizne Top-sail Braces	22	44
34			313

2. Cordage of 1 inch $\frac{60}{100}$ parts.

8	Lanniards of the Sprit-sail Top-mast Shroud	2.50	20
2	Sales of the Spirit-sail Top-mast tackles	5.50	15
1	Sales of the Sprit-sail Crain-lines	21.50	21.50
1	Sprit-sail top-sail Halliards	7.50	15
2	Sprit-sail Top-yardes Lifts	6	12
2	Pennants of the Sprit-sail Top-sail Braces	1.50	3
2	Sprit-sail Top-sail Braces	12	24
2	Sprit-sail Top-sail Clue-lines	12	24
2	Fore-top-mast tackle Fales	16	32
2	Fales of the Fore-top gallant Back-staies	21.50	43
1	Fore-top-gallant Halliards	38	38
2	Pennants of the Fore-top-gallant Braces	2.50	5
2	Fore-top-gallant Bolines	30	60

Fore-

		Fathã	Fathã
2	Fore-top-gallant Clue-lines	26	52
6	Fore-top-gallant Lanniards	2	12
2	Fales of the Main-top-gallant Tackle	8 50	17
2	Fales of the Main-top-gallant Back ſtaies	24	48
2	Main-top-gallant Lifts	28	56
2	Main-top-gallant Braces	33	66
2	Main-top-gallant Bolines	28	56
8	Mizne Brailes	9.50	76
2	Mizne top-maſt Tackle Fales	11	22
1	Fale of the Mizne Top-ſaile Crain-lines	42	42
6	Mizne Top-ſail Boline Bridles	1.25	7.50
2	Pennants of the Mizne Top-ſail Braces	1.50	3
2	Croſſe Jeck Braces	24	48
2	Fore-top-ſail Leech-lines	12	24
69			842

3. Cordage of 2 inches $\frac{30}{100}$ parts.

2	Lanniards of the Sprit-ſail ſtanding Lifts	4	8
4	Fore Martlines Leggs	7	28
2	Lanniards for the Foreyard Hoſſes	7.50	15
8	Lanniards for the fore-top-maſt Shroudes	2.50	20
2	Fore-top-ſail Braces	28	56
4	Fore-top-ſail Boline Bridles	3	12
2	Fore-top-gallant Parrel Ropes	1.50	3
10	Lanniards of the Main-top-maſt Shrouds	3.50	35
2	Main-top-ſail Braces	28	56
2	Main-top-ſail Leech-lines	14	28
2	Main-top-gallant Clue-lines	30	60
2	Pennants of the Main-top-gallant Braces	1.50	3
10	Lanniards of the Mizne Shrouds	3.50	35
2	Pennants of the Croſſe Jeck Braces	2.50	5
2	Slings for the Croſſe Jeck Yard	2.50	5

		Fathã	Fathã
2	Pennants of the mizne top-ſail Crain-lines	2	4
1	Mizne top-ſail Halliards in three parts	36	36
2	Mizne top-ſail Clue-lines	17	34
61			443

4. Cordage of 2 inches $\frac{20}{100}$ parts.

2	Sprit-ſail Braces	18.50	37
2	Sprit-ſail Clue-lines	13	26
	Sprit-ſail Bunt-lines in two parts	25	25
8	Sprit-ſail Top-maſt Shrouds	4	32
2	Pennants of the Sprit-ſail Top-maſt Tackle	1.50	3
3	Pennants of the Sprit-ſail top-ſail Crain-line	3	9
10	Puttox of the Sprit-ſail top-maſt ſhrouds	1.50	15
2	Sprit-ſail top-maſt Parrel Ropes	1.50	3
2	Fore-ſails mart-lines Fales	35	70
5	Fore ſail bunt lines	19	95
2	Fore braces	18	36
2	Fore top ſail Lifts	20	40
2	Falls of the foretop maſt back ſtaies	5.50	11
2	Pennants of the Fore top ſail Braces	2.50	5
1	Lanniard of the fore top maſt ſtay	6	6
2	Fore top ſail bauk lines	32	64
2	Fore top ſail bunt lines	12	24
2	Pennants of the fore top gallant back ſtaies	3	6
1	Fore top gallant tie	5	5
6	Fore top gallant puttox	1.50	9
1	Fore top gallant ſtay	21	21
1	Fore top gallant top rope	32	32
6	Fore top gallant Shrouds	4.50	27
4	Main ſail mart lines legs	9.50	38
2	Falls of the main top maſt tackles	18	36
2	Lanniards of the main top maſt back ſtaies	6	12

Main-

		Fathz	Fathz
2	Main-top-ſail lifts	30	60
2	Main-top-ſail bunt-lines falls.	21	42
2	Main-top-ſail bunt-lines legs	12	24
2	Pennants of the main-top-gallant tackles	3	3
2	Pennants of the main-top-gallant back-ſtayes	2.50	5
1	Main-top-gallant halliards	43	43
10	Main-top-gallant puttox	2	20
2	Main-top-gallant parrel ropes	1.50	3
2	Falls of the mizne tackles	19	38
1	Mizne truſſe	14	14
1	Mizne bowling	6	6
2	Pennants of the mizne top-maſt tackles	2.50	5
8	Mizne top-maſt ſhrouds	5	40
1	Mizne top-maſt tie	5	5
10	Puttox of the mizne top-maſt ſhrouds	18	18
2	Mizne-top-maſt parrel ropes	1.50	3
127			1006

5. Cordage of 3 inches $\frac{30}{100}$ parts.

1	Sprit-ſail top-maſt tie	4	4
2	Main-ſail mart-lines falls	37	74
2	Main-braces	30	60
8	Main-top-gallant ſhrouds	4.50	36
2	Sprit-ſail garnets	21	42
2	Sprit-ſail lifts	21	42
2	Pennants of the ſprit-ſail braces	2.50	5
2	Sprit-ſail ſheats	20	40
1	Hoſſe for the ſtay	8	8
2	Fore-top-ſail clue-lines	18	36
2	Fore-ſail boline bridles	2.50	5
2	Pennants for the fore-braces	2.50	5
2	Falls of the fore-top-maſt running back-ſtayes	20	40

Fore-

		Fathã	Fathã
2	Fore-top-maſt parrel ropes	2	4
1	Fore-top-maſt breſt rope	3	3
6	Main-ſail bunt-lines	10	60
1	Main-luffe tackle	10	10
1	Fall of the main-ſail bunt-lines	64	64
1	Main bouſing tackle	10	10
2	Lanniards of the main-yard hoſſes	4	8
2	Falls of the main-top-maſt running backſtaies	23	46
2	Main-top-maſt parrel ropes	2.50	5
1	Main-top-gallant-maſt-ſtay	22	22
1	Main-top-gallant top rope	35	35
1	Mizne tack	8	3
2	Croſſe jeck liſts	18	36
1	Mizne top-maſt top-rope	16	16
16	Lanniards of the fore ſhrouds	4.50	72
2	Fore-top-ſail clue lines	36	72
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44			846

6. Cordage of 3 inches $\frac{20}{100}$ parts.

1	Sprit ſail halliards	20	20
2	Hoſſes for the ſprit-ſail ſheet	2.50	5
2	Falls of the boats tackle for the fore-maſt	38	76
2	Other falls	27	54
2	Fore-liſts	25	50
2	Fore-bolines	18	36
2	Pennnnts of the fore-top-maſt tackles	2.50	5
2	Pennants for the fore-top-maſt running back-	3.50	7
8	Fore-top-maſt ſhrouds (ſtayes	7.50	60
10	Fore-top-maſt puttox	3	30
1	Fore-top-ſail halliards	43	43
2	Falls of the boats tackle for the main-maſt	43	86

Other

		Fathã	*Fathã*
2	Other falles	28	56
2	Main lifts	29	58
2	Pennants of the main braces	5	10
1	Lanniards of the main-top-maſt ſtay	6	6
1	Main-top-ſail halliards	55	55
2	Main-top-ſail bowlings	53	66
6	Main-top-ſail bowling bridles	3	18
2	Main-top-ſail clue-lines	43	86
1	Main-top-gallant tie	5	5
2	Runners of the mizne tackles	10	20
1	Mizne halliards	24	24
1	Mizne ſheet	16	16
59			892

7. Cordage of 4 inches $\frac{10}{100}$ parts.

2	Sprit-ſail ſtanding lifts	4.50	9
1	Fore-top-maſt ſtay	15	15
2	Fore-top-maſt ſtanding back ſtayes	18	36
1	Runner of the fore-top-ſail halliards	16	16
20	Lanniards of the main-ſhrouds	5	100
2	Main bolines	20	40
4	Main boline bridles	3.50	14
1	Main garnet fall	36	36
2	Pennants of the main-top-maſt tackles	3	6
10	Main-top-maſt ſhrouds	8.50	85
2	Pennants of the main-top-maſt back-ſtayes	9	18
2	Main-top-maſt ſtanding back-ſtayes	22	44
2	Pennants of the main-top-ſail braces	2.50	5
1	Main-top-maſt breſt rope	3	3
2	Pennants of the mizne tackles	4.50	9
1	Mizne jeere	15	15
1	Mizne parrel rope	4	4
56			455

8. Cordage of 4 inches $\frac{50}{100}$ parts.

		Fathã	Fathz
1	Lanniard of the foreſtay	5	5
10	Mizne ſhrouds	9.50	9.95
11			100

9. Cordage of 5 inches $\frac{50}{100}$ parts.

1	Fore halliards	37	37
3	Fore parrel ropes	3	9
1	Luff-hook rope	9	9
2	Hoſſes for the fore-yard	4	8
1	Fall of the fore-top-maſt top-rope	22	22
1	Main garnet guy	10	10
1	Fall of the main-top-maſt-top-rope	26	26
3	Main parrel ropes	4	12
2	Hoſſes for the main-yard	5	10
1	Runner for the main-top-ſail halliards	18	18
1	Fall of the main-top-rope	28	28
10	Main-top-maſt puttox	3.50	35
1	Mizne ſtay	19	10
28			234

10. Cordage of 6 inches $\frac{00}{100}$ parts.

2	Pennants of the ſprit-ſail ſheats	4.50	9
2	Fore-maſt runners of the boats tackles	17	34
2	Other runners	15	30
2	Fore ſheats	30	60
1	Fore-top-maſt tie	9	9

Main-

		Fathz	Fathō
2	Main maſt runners of the boats tackles	18	36
2	Other runners	16	32
1	Main top maſt ſtay	16	16
14			226

11. Cordage of 6 inches $\frac{30}{100}$ parts.

2	Fore top ſail ſheats	26	52
1	Lanniard of the main ſtay	10	10
1	Main halliards	50	50
2	Main jeers	30	60
2	Main ſheats	36	72
1	Pennant of the main garnet	6	6
1	Main top maſt tie	10	10
1	Mizne tie	10	10
11			270

12. Cordage of 7 inches $\frac{00}{100}$ parts.

1	Sling of the ſprit ſail yard	3	3
4	Pennants of the fore tackles	4.50	18
6	Fore ſhrouds	12	192
1	Fore breſt rope	3	3
1	Coller of the fore ſtay about the boſprite	4	4
1	Main breſt rope	4	4
2	Main top ſail ſheats	30	60
1	Pennant of the fore top maſt top rope	7	7
27			291

13 Cordage of 7 inches $\frac{70}{100}$ parts.

		Fathō	Fathō
8	Woldings for the bouſprite	6	48
1	Fore tie	16	16
2	Fore tacks	15	30
4	Pennants of the main-tackles	5	20
20	Main ſhrouds	13	260
1	Pennant for the many top maſt top rope	6	8
36			382

14. Cordage of 8 inches $\frac{20}{100}$ parts.

1	Main tie	16	19
2	Main tack	18	36
3			52

15. Cordage of 13 inches $\frac{30}{200}$ parts.

1	Fore ſtay	35	35
1	Coller about the ſtem	7	7
1	Pennant of the main winding tackle	7	7
3			29

16. Cordage of 17 inches $\frac{70}{100}$ parts.

1	Main ſtay	20	20

Here followeth another Table of ſome other Cordage and Ropes that are of neceſsity in a ſhip, and are here put down for their ſizes and lengths according to the former Table of Cordage for the fore-propounded ſhip.

Stoppers

		Fathō	Fathō
2	Stoppers at the bits of 6. 30 inches	5	10
2	Lanniards of 2. 50 inches	6	12
3	Stoppers at the bough of 4. 50 inches	8	16
4	Shanck panters of 4. 50 inches	4	16
1	Shank panter for the ſtream anker 4. 50 inches	4	4
1	Stopper for it 3. 80 inches	4	4
2	Can buy ropes 3. 80 inches	60	120
2	For Robins and Enſins of 2 inches 1 coile		
5	Lead lines		
2	Catt ropes of 3. 80 inches	4	8
1	Pennant of the fiſh tackle 5. 50 inches	5	5
1	Fall of the fiſh tacle 3. 50 inches	16	16
1	Long boats Davids ſeazing 4. 50 inches	3	3
1	Long boats panter 5 inches	4	4
1	Pinnaſſes Davids ſeazing 3. 50 inches	3	3
1	Pinnaſſes panter 4 inches	4	4
1	Pinnaſſes panter 3 inches	3	3
	Hoſſes for the head 4 inches	5	5
1	Ladder for the boſprite 3. 50 inches	10	10
	Lanniards of one inch 90 parts	5	5
1	Buy rope for the ſtream anchor 4 inches	12	12
1	Buy rope for the Kedge anchor 3. inches	12	12
2	Pair of but ſlings 4 inches	3	3
2	Pair of hogſhed ſlinges 3 inches	3	3
1	Ladder for the poop 2 inches	12	12
6	Winding tackle blocks		
3	Buy ropes of 5 inches	12	36
	For new bolt rope a 5 inch cablet		
	A gueſſe rope 4 inch cablet		
	Cackling of 3 or 4 inches		

Another Table of the Lengths and Thickneſſe of the Maſts and Yards of a Ship that is 86 Foot by the Keele, 33 Foot at the Middſhip Beam, and 15 Foot in Hold; which is of the burthen of about 448 Tun.

Each Grand maſt, and its ſmaller Maſts and Yards put together.

		Length in Feet	Thickn. in Inch.
1	The main maſt	96	32
	The main yard	83	27.50
	The main top maſt	49	16
	The main top maſt yard	41	12.50
	The main top gallant maſt	25.50	9
	The main top gallant yard	20.50	7
2	The fore maſt	85	28.50
	The fore yard	71	23
	The fore top maſt	42.50	15
	The fore top maſt yard	35	10.50
	The fore top gallant maſt	21.50	7
	The fore top gallant yard	18	5.50
3	The boſprite	76	25
	The ſprit ſail yard	66	18
	The ſprit ſail top maſt	18	5.50
	The ſprit ſail top ſail yard	16.50	4.50
4	The mizne maſt	59	19.50
	The mizne yard	58	18
	The croſſe jeck yard	38	8.50
	The minze top maſt	31	9
	The mizne top maſt yard	23	7

A *Table* of the names, the number, the bigneſſe, and the lengths, of each Cordage for Aparrelling, belonging to each Maſt of the fore-propounded Ship of 448 Tun.

1. Cordage belonging to the Main maſt.

		Inches	*Fathã*	*Fathã*
1	Main ſtay	16	19	19
2	Coller about the Stem	12	6	6
2	Main tacks	7.50	17	34
1	Main tie	7.50	15	15
20	Main ſhrouds	7	12.50	250
1	Main breſt rope	6.50	3.50	3.50
4	Pennants of the main tackles	7	4.50	18
1	Pennant of the main winding tackle	12	7	7
1	Pennant of the main Garnet	6	6	6
2	Main ſheats	6	34	68
2	Main Jeers	6	28.50	57
1	Main Halliards	6	46	46
1	Lanniard of the main ſtay	6	9	9
2	Main maſt runners of the boats tack.	5.50	16	32
2	Other Runners	5.50	15	30
1	Fall of the main top rope	5	24	24
2	Hoſſes for the main yard	5	4.50	9
3	Main parrel ropes	5	3.50	10
1	Main Garnet Guy	5	9	9
1	Main Garnet fall	4	33	33
4	Main boline bridles	4	3.50	14
2	Main bolines	4	19.50	39
20	Lanniards of the main ſhrouds	4	4.50	90
2	Pennants of the main braces	3.50	4.50	19

Main

		Inche	Fathã	Fathã
2	Main lifts (maſt	3.50	27.50	55
2	Falls of the boats tackles for the main	3.50	40	80
2	Other falls	3.50	26.50	53
2	Lanniards of the main yard hoſſes	3	3.50	7
1	Main bouſing tackle	3	9	9
1	Fall of the main ſail bunt lines	3	61	61
1	Main luffe tackle	3	9	9
6	Main ſail bunt lines	3	10	60
2	Main braces	3	27.50	55
2	Main ſail martlines fals	3	36.50	73
4	Main ſail mart line legs	2.50	9	36
103				

2. Cordage belonging to the main top maſt.

1	Pennant of the main top maſt top rope	6.50	7	7
2	Main top ſail ſheats	6.50	27.50	55
1	Main top maſt tie	6	9	9
1	Main top maſt ſtay	5.50	14	14
2	Main top maſt clue lines	3.50	40	80
10	Main top maſt puttox	5	3.50	35
1	Runner for the main top ſail halliards	5	16	16
1	Main top maſt breſt rope	4	3.50	3.50
2	Pennants of the main top ſail braces	4	2.50	5
2	Main top maſt ſtanding back ſtais	4	20.50	41
2	Pennants of the main topmaſt back ſtais	4	8	16
10	Main topmaſt ſhrouds	4	8	80
2	Pennants of the main top maſt tackles	4	2.50	5
2	Main top ſail clue lines	3.50	40	80
6	Main top ſail boline bridles	3.50	2.50	15
2	Main top ſail bolines	3.50	31	62
1	Main top ſail halliards	3.50	50	50
1	Lanniards of the main top maſt ſtay	3.50	6	6

Main

		Inches	*Fathã*	*Fathã*
2	Main top maſt parrel ropes	3	2.50	5
2	Falls of the main topmaſt running back	3	22	44
2	Main top ſail bunt lines fals (ſtais	2.50	20	40
2	Main top ſail buntline legs	2.50	11	22
2	Main top ſail lifts	2.50	28	56
2	Lanniards of the main top maſt back	2.50	6	12
2	Falls of the main top maſt tackles (ſtais	2.50	17.50	35
2	Main top ſail leech lines	2	13.50	27
2	Main top ſail braces	2	27.50	55
10	Lanniards of the main top maſt ſhrouds	2	3	30
1	Fall of the main top maſt top rope	5	24	24
78				

3. Cordage belonging to the main top gallant maſt.

1	Main top gallant tie	3.50	4.50	4.50
1	Main top gallant toprope	3	34	34
1	Main top gallant maſt ſtay	3	16	16
8	Main top gallant maſt ſhrouds	3	4.50	36
2	Main top gallant parrel ropes	2.50	1.50	3
8	Main top gallant puttox	2.50	2	16
1	Main top gallant halliards (ſtais	2.50	42 0	42
2	Pennants of the main top gallant back	2.50	2.5	5
2	Pennants of the main top gallant tackles	2.50	3	6
2	Pennants of the main top gallant bra-	2	1.50	3
2	Main top gallant clue lines (ces	2	28.50	57
2	Main top gallant bolines	1.50	27.50	55
2	Main top gallant braces	1.50	32	64
2	Main top gallant lifts	1.50	27.50	55
2	Falls of the main top gallant back ſtais	1.50	23	46
2	Falls of the main top gallant tackles	1.50	8	16
8	Main top gallant lanniards	1.50	2	16
4	Main top gallant boline bridles	1.50	1.25	5
1	Main flagſtaffe ſtay	1.50	13	13
53				

4. Cordage belonging to the Fore Maſt.

		Iaches	Fmthã	Fa:hã
1	Fore ſtay	12	14	14
2	Fore tacks	7	14.50	29
1	Fore tie	7	16	16
1	Coller of the ſtay about the boſprite	6.50	4	4
1	Fore breſt rope	6.50	2.50	2.50
12	Fore ſhrouds	6.50	11.50	138
4	Pennants of the fore tackles	6.50	4	16
2	Fore maſt runners of the boats	5.50	15	30
2	Other runners (tackles	5.50	14	28
2	Fore ſheats	5.50	7.50	15
2	Hoſſes for the fore yard	5	3.50	7
1	Luffe hook rope	5	8	8
3	Fore parrel ropes	5	3	9
1	Fore halliards	5	34	34
1	Lanniard of the fore ſtay	4.50	6	6
2	Fore bolines	3.50	17	34
2	Fore Lifts	3.50	23	46
2	Fore maſt falls for the Boats tackles	3.50	36.50	73
2	Other Falls	3.50	25	50
12	Lanniards of the fore ſhrouds	3	5	60
2	Pennants of the fore braces	3	2.50	5
2	Fore ſail Boline Bridles	3	2.50	5
2	Fore braces	2.50	17	34
5	Fore ſail bunt lines	2.50	18	90
2	Fore ſail martline Falls	2.50	33	66
2	Lanniards of the hoſſes for the fore-	2	7	14
4	Fore ſail Martlines legs (yard	2	6.50	26

5. Cordage

5. Cordage belonging to the fore top maſt.

		Inches	*Fathã*	*Fathã*
1	Pennant of the fore top maſt top rope	6.50	6	6
2	Fore top ſail ſheats	6	24	48
1	Fore top maſt tie	5.50	7.50	7.50
1	Fall of the fore top maſt top rope	5	20.50	41
1	Runner of the fore top ſail halliards	4	13.50	13.50
2	Fore top maſt ſtanding backſtais	4	17	34
1	Fore top maſt ſtay	4	14.50	14.50
8	Fore top maſt ſhrouds	3.50	7.50	60
8	Fore top maſt puttox (ning back ſtais	3.50	3	24
2	Pennants of the fore top maſt run-	3.50	3.50	7
2	Pẽnants of the fore top maſt tackles	3 50	2.50	5
2	Fore top ſail clue lines	3	34	68
1	Fore top maſt breſt rope	3	2.50	2.50
2	Fore top maſt parrel ropes	3	2	4
2	Fals of the fore top maſt running	3	19.50	39
2	Fore top ſail clue lines (back ſtais	3	17	34
1	Lanniard of the fore top maſt ſtay	2.50	5.50	5.50
2	Fore top ſail bunt lines	2.50	11.50	21
2	Fore top ſail bolines	2.50	30	60
2	Pennants of the fore top ſail braces	2.50	2.50	5
2	Falls of the fore top maſt back ſtais	2.50	5	10
2	Fore top ſail lifts	2.50	19.50	39
4	Fore top ſail boline bridles	2	2.50	10
2	Fore top ſail braces	2	25	50
8	Lãniards for the fore top maſt ſhrou.	2	2.50	20
2	Fore top ſail leebh lines	1.50	11.50	23
2	Fore top maſt tackle falls	1.50	15.50	31
67				

6. Cordage belonging to the fore top gallant maſt.

1	Fore top gallant tie	2.50	4	4
1	Fore top gallant ſtay	2.50	21	21

		Inches	Fathã	Fathã
6	Fore top gallant maſt puttox	2.50	1.50	9
1	Fore top gallant top rope	2.50	31	31
6	Fore top gallant ſhrouds	2.50	4	24
2	Penants of the fore top gallant back	2.50	2.50	5
2	Fore top gallant parrel ropes (ſtais	2	1	2
6	Fore top gallant lanniards	2.50	2	12
2	Fore top gallant clue lines	1.50	25	50
2	Fore top gallant bolines	1.50	27.50	55
2	Pennants of the fore top gallant	1.50	2	4
1	Fore top gallant halliards (braces	1.50	36	36
2	Falls of the fore top gallant back	1.50	21	42
2	Fore top gallant lifts (ſtais	1.50	25	50
4	Fore top gallant boline bridles	1.50	1.50	6
2	Fore top gallant braces	1.50	28.50	57
42				

7. Cordage for the Bouſprite.

8	Mouldings for the bouſprite	7	5.50	44
1	Sling of the ſpritſail yard	6.50	2.50	2.50
2	Pennants of the ſpritſail ſheats	5.50	4.50	9
2	Pennants of the ſpritſail crainlines	3	1	2
2	Spritſail ſtanding lifts	4	4	6
2	Hoſſes of the ſpritſail yard	3.50	2	4
1	Spritſail halliards	3.50	19.50	39
1	Hoſſe for the ſtay	3	7	7
2	Spritſail ſheats	3	19.50	39
2	Pennants of the ſpritſail braces	3	2.50	5
1	Fall of the ſpritſail crainlines	1.50	20.50	41
2	Spritſail lifts	1.50	5.50	11
2	Spritſail garnets	3	20.50	41
1	Spritſail bunt line in two parts	2.50	24	48
2	Spritſail clue lines	2.50	12.50	25
2	Spritſail braces (lifts	2.50	18	36
2	Lanniards of the ſpritſail ſtanding	2.50	2.50	7
35				

8. Cordage of the Spritſail Topmaſt.

		Inches	*Fathõ*	*Fathõ*
1	Spritſail top maſt tie (tackles	3	3.50	3.50
2	Pennants of the ſpritſail top maſt	2.50	1.50	3
2	Spritſail top maſt parrel ropes	2.50	1	2
8	Puttox of the ſpritſail top maſt	2.50	1.25	10
8	Spritſail top maſt ſhrouds (ſhrouds	2.50	3.50	28
3	Penants of the ſpritſail top ſail crain	2.50	3	9
2	Spritſail top ſail clue lines (lines	1.50	12.50	25
2	Spritſail top ſail braces (braces	1.50	11.50	23
2	Pennants of the ſpritſail top ſail	1.50	1.25	2.50
1	Fall of the ſpritſail topſail crainlines	1.50	41	41
2	Spritſail top ſail lifts	1.50	5.50	11
1	Spritſail top ſail halliards	1.50	7	7
2	Falls of the ſpritſail top maſt tackles	1.50	7	14
8	Lanniards of the ſpritſail top maſt (ſhroud	1.50	7	16
44				

9. Cordage of the Mizne maſt.

1	Mizne tie	6	8	8
1	Mizne ſtay	5	10	10
10	Mizne ſhrouds	4.50	9	90
2	Mizne parrel rope	4	3.50	3.50
1	Mizne tack	3	3	3
1	Mizne ſheat	3.50	15	15
1	Mizne halliards	3.50	22	22
2	Runners of the mizne tackles	3.50	9	18
1	Mizne bolines	2.50	5.50	5.50
1	Mizne truſſe	2.50	14	14
2	Falls of the mizne tackles.	2.50	36	36

		Inches	Fathz	Fathã
10	Lanniards for the Mizne ſhrouds	2	3	30
8	Mizne brails	2	9	72
2	Pennants of the mizne tackles	4	2	5
1	Mizne jeere;	4	13.50	13.50
43				

10. Cordage of the Croſſe jeck yard.

2	Croſſe jeck lifts	3	17	34
2	Slings for the croſſe jeck yard	2	2	4
2	Pennents of the croſſe jeck braces	2	2	4
2	Croſſe jeck braces	1.50	23	46
8				

11. Cordage of the mizne top maſt.

1	Mizne top maſt top rope	3	15	15
2	Mizne top maſt parrel ropes	2.50	1.50	3
8	Puttox of the mizne top maſt ſhrouds	2.50	2	16
1	Mizne top maſt tie	2.50	5	5
8	Mizne top maſt ſhrouds	2.50	5	40
2	Pẽnants of the mizne top maſt tackles	2.50	2.50	5
2	Mizne top ſail clue lines	2	16	32
1	Mizne top ſail halliards in 3 parts	2	32	32
2	Pẽnãts of the mizne topſail crain lin.	2	1.50	3
2	Pennants of the mizne topſail braces	1.50	1.50	3
6	Mizne topſail boline bridles	1.50	1.25	7.50
1	Fall of the mizne topſail crain lines	1.50	41	41
2	Mizne top maſt tackle falls	1.50	10	20
2	Mizne top ſail braces	1.50	19.50	39
2	Mizne top ſail bolines	1.50	14.50	29
8	Mizne top ſail lanniards	1.50	2	16
50				

Here followeth another Table of ſome other Cordage and Ropes that are of neceſſity in a ſhip, and are here put down for their ſizes and lengths according to the laſt foregoing Table of Cordage for the laſt propounded ſhip of 448 Tun.

Stoppers

		Inches	*Fathã*	*Fat hã*
2	Stoppers at the bits of 6 inches	6	4.50	9
2	Lanniards of 2.50 inches	2.50	5.50	11
2	Stoppers at the Bough of 4 inches	4	7	14
4	Shank panters of 4 inches	4	3	12
1	Shank panters for the ſtream anchor		3	3
1	Stopper for it (3.50 inches		3	3
2	Can buy ropes	3.50	57	114
	For Robbins and erings 1 ſmall coil	2		
6	Lead lines			
2	Catt ropes	3.50	3	6
1	Pennant of the fiſh tackle	5	4.50	4.50
1	Fall of the fiſh tackles	2.50	14	14
1	Long boats Davids ſeaſing	3.50	2.50	2.50
1	Long boats panter	4.50	3.50	3.50
1	Pinnaſſes Davids ſeaſing	3	2.50	2.50
1	Pinaſſes panter	3.50	3.50	3.50
1	Jellewats panter	2.50	2.50	2.50
	Hoſſes for the head	3.50	4.50	4.50
1	Ladder for the boſprite	3	9	9
	Lanniards of	1.50	4.50	4.50
1	Buy rope for the ſtream anchor	3.50	10	10
1	Buy rope for the kedge anchor	2.50	10	10
2	Pair of but ſlings	3.50	2.50	2.50
2	Pair of hogſhed ſlings	2.50	2.50	2.50
1	Ladder for the Poop	3.50	9	9
6	Winding tackle blocks			
3	Buy ropes of	4.50	11	33
2	For new bolt ropes a Cablet of	4.50		
	For a gueſſe rope a Cablet of	3.50		
	Cackling of 3 inches or	3.50		

THE first thing to begin with is to find the length of the Main mast of any Ship, whose length at the Keel, the breadth at the Beam, and the depth in Hold is known, which may be done two severall wayes,

The first, which is the best, is to adde the breadth and the depth of the ship together, and double it; and divide the product by 3. the quotient is the length of the Main mast in Yards.

Example, In the second ship I have propounded, the breadth is 33, the depth is 15, their sum is 48, that doubled is 96, which divided by 3. the quotient is 32, that is 96 foot. Or it is all one to adde the breadth and depth together, and double it, and the sum is the length in feet.

A second way is to adde the length of the Keyle, the breadth of the beam, and the depth together, and to that sum adde the difference between the breadth and twice the depth, and multiply the last sum by the breadth at the Beam, the product whereof divide by the former last sum, and the quotient is the length of the main mast in yards.

Example, In the ship last propounded, the length of the Keele 86, the breapth of the beam 33, the depth 15, their sum is 134, unto which adde the difference between the breadth and twice the depth, which is 3, the sum is 137, which multiplied by 33, the breadth, the product is 4521, which divided by 137, the quotient is 33, which is a yard more then it was the former way, but it is too much, and therefore the former way is the better way. Notwithstanding, either of these wayes, the builder of the ship may see some just cause, wherefore he will not have the main mast of his ship so long as the shortest of these two wayes doth allow, but it may be one yard or two shorter. It will be demanded what the former two Tables that I have put down are useful for. I answer, very useful, because the Masts and

Yards

Yards that I have put down in thoſe Tables (for their lengths) are in ſuch a proportion one to another, that whatſoever length the Main maſt of any ſhip be propounded to be, the reſt ought to follow in order according to that proportion that I have there ſet downe; or elſe, the ſhip, when it is maſted, Yarded, and Rigg'd, will not be uniform, or rather (if you pleaſe) not ſhip-ſhapen, nor yet ſo good to ſail.

And accordingly all the rigging alſo may be fitted according to that proportion, or if one maſt alone ſhould be altered different from this proportion; yet all things belonging to that Maſt (as ſmaller Maſts and Yards, and all Cordage) ſhall all be found from the former Tables, from either of them, by the Inſtrument nominated in the Title page, only by inſpection.

Having found the length of the main maſt, as before is ſhewed, and the like may be done for any other ſhip, we may by the help of either of the two Tables, which I have here before ſet down, after the length of the main maſt, and the thickneſſe at the partners is found, the length and thickneſſe of all the other maſts and yards may be found by either of our former Tables, by the *Rule of Three*, becauſe it is but a lineal proportion, but I ſhall onely make uſe of the Mariners Scale mentioned in the Titlepage, by which it may be done (as is aforeſaid) by inſpection, without altering the Scale, as I ſhall immediately ſhew.

But firſt I ſhall deſcribe the Mariners ſcale, ſo much of it as is uſefull in this buſineſſe. It is the one halfe of a Geometricall Square, which is cut off in the Diagonall line, having each ſide divided into 100 equal parts, and an Index divided into the ſame equall parts moving upon a centre, ſo that if there be never ſo many things depending upon one proportion, they may be all found by once ſetting the Index by inſpection, as all the things that we have vow in queſtion do.

Example, To find the length and thickneſſe of all the maſts and yards for a ſhip of 448 Tuns (having firſt the main maſt,) by our Table of Maſts and yards of a ſhip of 600 Tuns, the main maſt of the firſt being 107 foot, and of the ſecond 96 foot. Bring 96 of the baſe

of

of the Scale to fit with 107 of the Index of the Scale, and there ſtay it faſt, and look againſt 93 the main yard of the firſt, in the Index of the Scale, and in the baſe you ſhall ſee 83 the length of the main yard of the ſecond, and againſt 36 in the Index, the thickneſs of the main maſt of the firſt, and in the baſe you ſhall ſee 32 the thickneſs of the main maſt of the ſecond; and ſo proceed for all the reſt, and you ſhall find 27. 50 for the thickneſſe of the main yard, and 49 for the length of the main top maſt, and 16 the thickneſſe, and 41 the length of the main top maſt yard, and 12.50 inches the thickneſſe, and 25.50 the length of the main top gallant maſt, and 9 inches the thickneſſe, and ſo all the reſt of the maſts and yards their lengths and thickneſſe, as you may ſee it ſet down in the Table before belonging to our ſuppoſed ſhip of 448 Tun.

Now I will go forwards to find the ſizes, the lengths, and the quantity of Cordage that will ſerve to Apparel our ſuppoſed Ship completely, which ſhall be performed with the ſame eaſe and ſpeed that the maſts and yards were, the Scale remaining ſtill unaltered.

Here note that I ſhould have given the lengths of all the maſts and yards by a way that is uſed by ſome from the main maſt, and ſo from one to another: but becauſe the way that I have here propounded is far more eaſie and ſpeedy, I make uſe of it.

Firſt, for the ſize of our cordage, we are to conſider it is but a lineal proportion between the diameters of the two main maſts, which are 36 and 32, ſo that if we ſhall look againſt 1 inch $\frac{10}{100}$ the firſt ſize Cordage of the ſhip of 600 Tun in the index of the Scale, we ſhall ſee 1.25 in the baſe for the firſt ſize for the ſhip of 448 Tun, and for 1 inch, $\frac{6}{10}$ parts we ſhall find one inch $\frac{4}{10}$ parts, & for 2 inches $\frac{3}{10}$ parts we ſhall find 2 inches, and for 2 inches $\frac{3}{10}$ parts we ſhall find 2 inches $\frac{95}{100}$ parts, and for 3 inches $\frac{3}{10}$ parts we ſhall find 3 inches, and for 3 inches $\frac{9}{10}$ parts we ſhall find 3 inches $\frac{5}{10}$ parts, and for 4 inches $\frac{1}{10}$ parts we ſhall find 3 inches $\frac{5}{10}$, and for 4 inches $\frac{5}{10}$ parts, we ſhall find 4 inches, and for 5 inches $\frac{4}{10}$ parts, we ſhall find 5 inches, for 6 inches parts we ſhall find 5 inches $\frac{4}{10}$ oarts, for 6. inches $\frac{3}{10}$ parts we ſhall find 5 inches $\frac{6}{10}$ for 7 inches 00 parts we ſhall find 6 inches $\frac{2}{10}$ parts,

for

for 7 inches $\frac{3}{10}$ parts we ſhall find 7 inches, for 8 inches $\frac{8}{10}$ parts we ſhall find 7 inches $\frac{4}{10}$ parts, for 13 inches $\frac{4}{10}$ parts we ſhall find 12 inches, and for 17 inches $\frac{3}{10}$ we ſhall find 16 inches.

If it ſhall happen that any number be too long for the Scale, either in the ſize or length of any Cordage, we may do it by the half or the quarter of it, or one tenth part of it, as for example, our 4th. Cordage in our firſt Table of Cordage is 1006 fatham for a ſhip of 600 tun, how much muſt we have for the ſhip of 448 tun? look againſt $100\frac{1}{2}$ of the Index of the Scale, and in the baſe you ſhall ſee $89\frac{1}{3}$, which is 895 fatham, and ſo in like manner we may proceed to find the quantity of all the other ſizes; as it follows: For the firſt ſize in the table is 313, for which we ſhall find 278; and for the ſecond ſize, for 842 we ſhall find 752; and for the third ſize, for 443 we ſhall find 393; and for the fifth ſize for 846, we ſhall find 755; and for the 6th. ſize for 892, we ſhall find 791; and for the 7th. ſize for 455, we ſhall find 405; and for the 8th. ſize for 100, we ſhall find 84; and for the 9th. ſize for 234, we ſhall find 208; and for the 10th. ſize for 226; we ſhall find 201; and for the 11th. ſize for 270, we ſhall find 240; and for the 12 ſize for 291, we ſhall find 258; and for the 13th. ſize for 382 we ſhall find 340; and for the 14th. ſize for 52, we ſhall find 46; for the 15th. ſize for 29, we ſhall find 25 & an half; for the 16th. ſize for 20, we ſhall find 18. So now we have found the quantity of cordage of every ſize for the rigging of the ſuppoſed ſhip of 448 tun.

If it be objected, that there is too much variety of cordage for every ordinary ſhip, any man may go to the Table and take out the quantity of cordage of each ſize that he intends to make uſe of, and adde it into one ſumme, then by the Scale he may find what quantity will ſerve either for a bigger or a leſſer ſhip then that Table is made for, as is plain by finding the quantities of each ſixe before.

Next we will proceed to find the lengths of ſome particular Cordage, in which there is no difficulty at all, for the Scale remaining as it was at firſt, if we look for the length of any particular Cordage in the firſt or ſecond Tables of Cordage, if it be for a leſſer ſhip then that which is of 300 Tun, then look the length of the Cordage that is in

the Table, in the Index of the Scale, and right againſt it you ſhall ſee the length of the Cordage required in the baſe of the Scale; or if it be for a greater then that of 600 or that of 448 you muſt look that in the Table in the baſe of the Scale, and right againſt it in the Index you ſhall ſee the length of the Cordage required.

Example, I would know what ſhould be the length of the two fore top ſail braces for our ſuppoſed ſhip of 448 tun. I look in the firſt Table of cordage, and find them to be in the third ſize cordage of two inches 3 tenth parts, and their lengths, both of them, to be 56 fatham, which I look in the Index of the Scale, and right againſt it in the baſe is 50 the length of the fore topſail braces for the ſhip of 448 tun, as you may ſee in the ſecond Table of cordage: ſo likewiſe if you look for any other cordages length, you ſhall find it in the ſame manner, as you may make tryal from the one Table to the other, by either Scale, which is inſtruction ſufficient for finding anything of this kind, for any ſhip, and whatſoever may be done by proportion by the Marriners Scale, may be done by two ſliding lines of numbers.

It remains that in the next place I ſay ſomething concerning the ſizing of cables.

Your ſheat cable is commonly ſo many half inches about as your ſhip is breadth in feet at the mid ſhip beam.

Our ſuppoſed ſhip of 448 tun is 33 foot at the mid ſhip beam, therefore the ſheat cable muſt be 16 inches and a half about. To find the ſizes of the reſt of the cables, it may be done by the weight of the Anchors in the manner following.

Suppoſe your ſheat anchor be 18 hundred weight, and your cable be 16 inches and a half about, and you have another anchor of 2 11 100. weight, how many inches about ſhall be the cable for it?

To anſwer this and the like demands, there are two lines at the lower ſide of the Scale, the one of equal parts containing 38.5 parts, and the tens and fives drawn out, and is numbred at every 50 thus, 50 100 150, &c. the other line is of unequal parts, and begins at 1 and ends at 27.7, and is numbred to every unite, and each unite is divided from 1 to 10 by fives, and from 10 to 27.7 by tens, each unite into ten parts.

First,

First, becauſe 11 and 18 are but ſmall numbers, I double them and they are 22 and 36, and I look in the unequal parts for 16 and an half, and againſt it in the equal parts is 136, of which I take half (which is 68) becauſe it is above 100. Then I bring 36 of the Index againſt 22 of the perpendicular ſide of the Scale, and ſtay the Index faſt, and look againſt 68 of the Index, where I ſhall ſee 41 and a half of the perpendicular ſide of the Scale, which being doubled is 83, which I look in the equal parts, and againſt it in the unequal parts you ſhall ſee 12.8, which is 12 inches and 8 tenth parts, the circumference of a cable for an anchor of 11 hundred weight.

But cables may be alſo proportioned from the burthens of ſhips in this manner following:

Suppoſe a ſhip of 300 tun have a ſheat cable of 15 inches about, what ſhall the circumference of a ſheat cable for a ſhip of 448? becauſe the numbers are great, I take the tenth part of each, and they are 30 and 46, then look 15 in the unequal parts, and againſt it in the equall parts is 112 and an half, the half of which is 56 and a quarter: ſo I bring 30 of the baſe of the Scale againſt 40 of the Index, and againſt 56 and a quarter of the baſe of the Scale, I ſee in the Index 75, which I double, and it is 150, which I look in the equall parts, and againſt it in the unequall parts is 17 and 3 tenths, which is 8 tenths of an inch more then it was the other way: but it is not the more unſafe for the ſhip to ride by if the hemp be good: and ſo the ſizes of all the reſt of the cables may be found from one ſhip to another, after the ſame manner.

Here it may be it will be objected that the ſtais of the middle maſts may not hold in proportion according to the lengths of the middle maſts in all ſhips, becauſe the diſtance between the main maſt and the fore maſt may not be proportionable in all ſhips according to their lengths; if it be ſo, yet the Scale performs it another way very eaſily and exactly.

1. *Example*, I ſuppoſe a ſhip of 75 foot by the Keel, the main maſt is 84 foot, the depth in hold 13 foot, and 5 foot between the Decks, that i 18 foot, which taken out of 84, reſts 66, the height of the maſt

above the Decks, and commonly the distance between the main mast and fore mast is three fifths of the ships keele, which in this is 45 foot, (and the distance between the main mast and the mizne mast is halfe as much as the distance between the main mast and the fore mast) but to proceed to find the length of the main stay, I looke upon the Scale where 66 of the base of the Scale doth intersect 45 of the perpendicular side of the Scale, and bring the edge of the Index to that intersection, and in the edge of the Index you shall see 80 foot, the length of the main stay besides the coller.

2 *Example*, in the second propounded ship of 86 foot by the keel, whose mast is 96 foot, the depth in hold 15 foot, and 5 foot and an helfe between decks, that is 20 foot and an halfe, which taken out of 96 rests 75 and an halfe, the height of the mast above the deck, three fifths of the keel is 51, the distance between the main mast and the fore mast, so I look upon the scale for the intersection of 75 and an halfe of the base of the Scale, and 51 of the perpendicular side, and bring the edge of the Index to it, and in the edge of the Index I see 91 foot, the length of the main stay without the Coller.

Thus I have finished what I intended for this businesse of Masting, Yarding, Apparelling, Anchoring, and Cableing of any ship whatsoever: but

I will farther shew by this following Table how you shall finde what weight of each size cordage you shall use for to Apparel any ship whatsoever, which Table shews how many fatham and odde feet of any Cordage there is in one hundred weight, from one inch to ten inches in circumference, to every tenth part of an inch.

Inch.	Part.	Fathom and feet in one C Wei.
1	1	405 0
1	2	338 0
1	3	289 0
1	4	249 0
1	5	216 3
1	6	191 0
1	7	169 0
1	8	150 0
1	9	135 0
1	0	121 3
2	1	111 0
2	2	100 3
2	3	92 2
2	4	84 3
2	5	77 3
2	6	72 0
2	7	67 0
2	8	62 3
2	9	58 0
3	0	54 0

Inch.	Part.	Fathom and feet in one C Weight
3	1	50 3
3	2	47 1.50
3	3	44 3
3	4	42 0
3	5	39 3
3	6	37 1.50
3	7	35 3
3	1	33 4.50
3	9	31 4.50
4	0	30 1.50
4	1	29 0
4	2	27 3
4	3	26 1.50
4	4	25 0
4	5	24 0
4	6	23 0
4	7	22 0
4	8	21 0
4	9	20 1.50
5	0	19 3

Inch.	Part.	Fa. feet in C.w	Inch.	Part.	Fa. & feet in C. wig.	Inch	Part	Fa. & feet in C. wei.	Inch.	Part.	Fa & fee in C. we.	Inch.	Part	Fa & fee in C. part
5	1	18 4	6	1	13 0.50	7	1	9 3.50	8	1	7 2.50	9	1	5 5
5	2	18 0	6	2	12 3.50	7	2	9 2	8	2	7 1.50	9	2	5 4.50
5	3	17 2	6	3	12 1	7	3	9 1	8	3	7 0	9	3	5 3.50
5	4	16 5	6	4	11 5	7	4	8 5.50	8	4	6 5	9	4	5 2.75
5	5	16 1	6	5	11 3	7	5	8 4	8	5	6 4.25	9	5	5 2
5	6	15 3	6	6	11 1	7	6	8 2.50	8	6	6 3.50	9	6	5 1.25
5	7	15 0	6	7	10 5.50	7	7	8 1	8	7	6 2.50	6	7	5 0.75
5	8	14 3	6	8	10 3	7	8	8 0	8	8	9 1.75	9	8	5 0.25
5	9	14 0	6	9	10 1	7	9	7 5	8	9	6 1	9	9	4 5.5
6	0	13 3	7	0	9 5.50	8	0	7 3.50	9	0	6 0	100		4 5 0

I ſhall now give an example or two of the uſe of this Table, and ſo conclude, but firſt I ſhall ſet down a decimall Table of ſuch numbers as are to be ſet to the right hand of the fathams, when you are to divide any quantity of fathams of cordage to know how many hundred weight it is. As for 1 foot you muſt take 15, for 1 ½ foot 25, for 2 foot 34, for 2½ foot 42, for 3 foot 5, for 3½ foot 6, for 4 foot 7, for 4½ foot 75, for 5 foot 8, for 5½ foot 86. Alſo you are to note, that if you ſet one figure before the fathams that are in the Table above, you muſt alſo ſet one Cipher to the right hand of your Dividend, or if you ſet two figures, you muſt ſet two Ciphers before your dividend.

1 *Example*, I deſire to know how many hundred weight is in the 4 ſixe Cordage in the firſt Table, which is 2 inches $\frac{2}{10}$ parts, and the number of fathams is 1006, and in this laſt table we find 92 fatham and 2 foot is in hne hundred weight, and (as is before directed) for 2 foot I am to take 34. ſo my diviſor muſt be 92.34, and my dividend muſt be 1006.00, which being divided, the quotient will be 10 hundred weight, and about nine tenths of an hundred, for the weight of 1006 fathams of that cordage of 2 inches $\frac{2}{10}$ circumference.

2 *Example*, Suppoſe that a man may have a parcell of cordage of the ſixth ſize in the firſt Table of 3 inches 9 tenth parts circumference, and the weight of it is 12 hnndred, how ſhall I know whether it be enough to ſatisfie that which is required in that Table? I look in this laſt Table and find that 50 fatham and 3 foot weigheth one hundred weight, then according as in the firſt example, I put down for 3 foot 5, and then it will be 50. 5, which I multiply by 12, and the product is 606 fatham, which is not ſo much as is there required, for it ſhould be 829, ſo it is 223 fatham too little, which being divided by 50. 5 will come to 4 hundred, one quarter, and more of the ſame ſized cordage. And ſo I conclude.

FINIS.